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EXAMINER

DESAI, ANISH P

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



**DETAILED ACTION**

1. Applicant's arguments in response to the Office action dated 06/10/09 have been fully considered.
2. Support for amended claim 1 is found in the specification (e.g. paragraphs 0010 and 0076 of US PG Pub of this application).
3. Applicant's amendment and response to the Examiner's 112-first and second paragraph rejections are found persuasive. Accordingly, said rejections are withdrawn.
4. The objection to specification as set forth in the previous Office action (OA) is maintained.
5. The art rejections are maintained. The Examiner notes that on page 7, section 19 of 06/10/09 OA, the Examiner had inadvertently referred to "Maruoka" (see "Further, at column 3 lines 15-25 Maruoka discloses...") instead of "Spada".

**Specification**

6. The disclosure is objected to because of the following informalities: on page 4 line 35 applicant has cited Fox equation to calculate the glass transition temperature of a polymer. Additionally, applicant states "Wn the mass fraction of the respective monomer n (*in % by weight*)". It is noted that Fox equation cited by applicant to calculate Tg requires mass *fraction* (Wn) of the monomer. As such, the Examiner suggests deletion of "in % by weight" as recited on page 4 line 37 of the specification.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 3, 4, 6, 7, 9, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruoka et al. (US 5,252,395) in view of Spada et al. (US 6,293,037 B1) and McLaughlin et al. (US 6,365,793B1).**

8. With respect to claim 1, Maruoka discloses a pressure sensitive adhesive sheet comprising a substrate and a layer of pressure sensitive adhesive composition coated on the substrate (abstract). The PSA of Maruoka is formed of copolymer comprising (A) 30 to 93 weight percent of monomeric unit of acrylic ester, wherein acrylic ester is an ester of acrylic acid or methacrylic acid with an alcohol having 1 to 14 carbon atoms (equated to read on applicant's monomer (a) as claimed) such as n-butyl acrylate and 2-ethylhexyl acrylate (column 3 lines 35-40 and column 5 lines 5-20), (B) a polar acrylic monomer, and (C) a high T<sub>g</sub> macromonomer having T<sub>g</sub> of 20°C or more (column 5 lines 40-65). Additionally, Maruoka discloses that the **copolymer of his invention has T<sub>g</sub>** in the range of -60°C to **60°C** (column 8 lines 50-55), which meets claim requirement of PSA having T<sub>g</sub> of greater than or equal to 30°C.

9. As high Tg macromonomer (C), Maruoka discloses list of monomers including **isobornyl acrylate** (see column 5 line 59). It is noted that Maruoka is silent as to specifically using isobornyl acrylate

10. However, Spada discloses acrylic PSA tape that comprises 9 to 40% by weight of isobornyl acrylate and 50 to 91% by weight of one or more of alkyl acrylate (abstract). Further, at column 3 lines 15-25, Spada discloses isobornyl acrylate (IBOA) is a high boiling, low odor, low toxicity monomer and preferred PSAs are made using between about 20 to 30% by weight of IBOA, based on the total weight of the monomers. Additionally, Spada discloses that IBOA forms a homopolymer having a high glass transition temperature ( $T_g = 94^{\circ}\text{C}$ ) (column 3 lines 15-25).

11. The aforementioned disclosure of Spada is interpreted to meet applicant's claim requirement of 10 to 40% by weight of isobornyl acrylate unit (claim 1) and 15 to 40% by weight of component (b) (i.e. isobornyl acrylate) (claim 11) as claimed.

12. Maruoka desires a high Tg monomer ( $T_g$  of greater than  $20^{\circ}\text{C}$ ) that is used in acrylic copolymer of his/her invention which also includes isobornyl acrylate as one of the possible monomers. Spada discloses monomer such as isobornyl acrylate that has low odor and low toxicity and whose homopolymer has high  $T_g$ .

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13. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the isobornyl acrylate in the amount as taught by Spada and used it in the invention of Maruoka, because isobornyl acrylate has low odor and low toxicity, and high Tg, which is desirable by Maruoka.

14. As to claim limitation of teaching aluminum (III) acetylacetonate crosslinker, while Maruoka at column 10 lines 33-34 discloses "Agents to crosslink the adhesive composition may also be added to the composition according to desire", Maruoka is silent as to teaching the aforementioned crosslinker.

15. However, McLaughlin discloses a PSA tape. Further, at column 7 lines 5-10, McLaughlin discloses a thermally crosslinked acrylic adhesive that includes metal chelate such as aluminum acetylacetonate.

16. Based on the above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add aluminum (III) acetylacetonate crosslinker as taught by McLaughlin in the acrylic PSA of Maruoka as modified by Spada, motivated by the desire to provide PSA with suitable cohesiveness, and given that Maruoka desires crosslinkers.

17. With respect to the claimed property of PSA having bond strength on steel, it is submitted that the PSAs of Maruoka as modified by Spada and McLaughlin and

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applicant comprise polymer formed of monomers (a) and (b) and aluminum (III) acetylacetonate. Based on this, the PSAs of Maruoka as modified by Spada and McLaughlin and applicant are structurally and compositionally equivalent to those presently claimed. Thus the aforementioned property would necessarily be present in the PSA of Maruoka as modified by Spada and McLaughlin.

18. With respect to claim 3, at column 5 lines 25-40, Maruoka discloses polar acrylic monomer (B) in the amount of 1 to 30 weight percent (column 3 lines 35-40) such as 2-hydroxyethyl (meth)acrylate, glycidyl (meth)acrylate etc. which read on claim 3.

19. With respect to claims 4 and 12, as previously noted PSA of Maruoka is formed of copolymer comprising (A) 30 to 93 weight percent of monomeric unit of acrylic ester, wherein acrylic ester is an ester of acrylic acid or methacrylic acid with an alcohol having 1 to 14 carbon atoms (column 5 lines 5-20), which meets said claims.

20. Regarding claim 6, Maruoka discloses that "Agents to prevent degradation such as ultraviolet absorbents and antioxidants may be added to the adhesive composition" (column 10 lines 30-35), which is interpreted to read on fillers and aging inhibitors of claim 6.

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21. Regarding claims 7 and 9, Maruoka discloses an adhesive, wherein the adhesive is applied to substrates such as PVC, PE, PP, non-woven fabric, and woven fabric (column 10 lines 35-40).

**22. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruoka et al. (US 5,252,395) in view of Spada et al. (US 6,239,037 B1) and McLaughlin et al. (US 6,365,793B1) as applied to claims 1 and 7 above, and further in view of Massow et al. (US 5,194,455).**

23. Maruoka as modified by Spada and McLaughlin is silent as to teaching claims 8 and 16.

24. However, Massow discloses acrylate based hot melt adhesive. Additionally, at column 6 lines 30-40, Massow discloses that the thickness of the adhesive layer, depending on the intended use is between 5 to 1500  $\mu\text{m}$ .

25. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the PSA layer of Maruoka with the thickness as taught by Massow, motivated by the desire to form a PSA tape that has a suitable thickness so that it can be applied to the intended substrates.



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26. **Claims 5 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruoka et al. (US 5,252,395) in view of Spada et al. (US 6,239,037 B1) and McLaughlin et al. (US 6,365,793B1) as applied to claim 1 above, and further in view of Khieu et al. (WO 98/24978).**

27. Maruoka as modified by Spada and McLaughlin is silent as to teaching claims 5, and 13-15.

28. However, Khieu discloses that PSAs have been used in durable pavement marking tapes (page 1 lines 20-25). With respect to claims 5, 14, and 15, Khieu discloses that PSA of his invention contains tackifiers in the amount ranging from 10 to 60% by weight in order to provide adhesive the necessary forming and bond maintenance properties (page 8 lines 10-25). Additionally, at page 5 lines 10-15, Khieu discloses PSA comprising about 10 to 25% by weight tackifer. Further, at page 9 lines 4-7, Khieu discloses compatible tackifiers (see "The resin may be hydrogenated if desired for improved stability and/or **compatibility**"). Alternatively, since Khieu discloses using hydrocarbon resin tackifiers (page 8 line 14) which are the same as those used in the present invention, the tackifiers would therefore intrinsically be compatible with the polymer of Maruoka modified by Spada which is identical to the polymer presently claimed.

29. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add the tackifiers of Khieu in the amount taught by

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Khieu in the adhesive of Maruoka as modified by Spada and McLaughlin, motivated by the desire to provide the adhesive with necessary bond maintaining property and tackiness.

**30. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruoka et al. (US 5,252,395) in view of Spada et al. (US 6,239,037 B1) and McLaughlin et al. (US 6,365,793B1) as applied to claims 1 and 7 above, and further in view of Everaerts et al. (US 5,612,136).**

31. Maruoka is silent as to teaching claim 10.

32. However, Evearets discloses a method of bonding PSA tape to acid-resistant automotive paints (abstract), which is interpreted to read on applicant's method of bonding an adhesive tape to automotive finishes.

33. While Maruoka does not explicitly teach aforementioned method, it is noted that Maruoka's adhesive tape is excellent in blister resistance, adhesive strength, and it is removable (see column 2 lines 65-67 to column 3 lines 1-5). Additionally, at column 1 lines 28-31, Maruoka discloses that PSA sheets can be applied to substrates such as metals, plastics etc.

34. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the adhesive tape of Maruoka in the method of bonding an adhesive tape to automotive finishes, motivated by the desire to use the adhesive tape having excellent adhesiveness and removability.

***Response to Arguments***

35. On pages 6-7 of the amendment, applicant argues “The PSA of the presently claimed invention is apolar (as opposed to polar) due to the amount of isobornyl acrylate in the composition. The skilled artisan is well aware that the polarity of a thermal crosslinker should match the polarity of the composition to which it is being added simply because similar chemicals are more easily miscible with each other if the polarity is same. Indeed, a homogeneously crosslinked adhesive requires good miscibility. To this end, a skilled artisan would not have expected a polar thermal crosslinker to achieve sufficient miscibility in apolar composition. Surprisingly, however, a very polar thermal crosslinker, aluminum (III) acetylacetonate, achieved excellent....which would defeat the entire purpose of a removal adhesive.”

36. In response, the Examiner submits that applicant’s arguments relating to unexpected results are not found persuasive given that they are presented without any factual evidence on the record in the form of suitable affidavit or declaration. It is noted that “the arguments of counsel cannot take the place of evidence in the record”, *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). As set forth in MPEP 716.02(g), “the reason for requiring evidence in a declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 24 and 18 U.S.C. 1001”. Additionally, the Examiner respectfully reminds applicant that any evidence must show the results are indeed unexpected (see MPEP 716.02(a and b)).

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37. On page 7 of the amendment, applicant argues that “Although, McLaughlin does teach aluminum acetylacetonate as a thermal crosslinker, his underlying polymer composition is completely different from the polymer of the present invention.

Therefore, even though McLaughlin teaches the same crosslinker, a skilled artisan would still not have any reasonable expectation that the crosslinker would work in a completely different polymer composition. Accordingly, the applicants respectfully...withdraw this rejection.”

38. The Examiner respectfully disagrees. It is noted that the primary reference of Maruoka generally discloses applicant’s claimed acrylic based adhesive composition. Additionally, Maruoka is open to presence of a crosslinking agents (see column 10 lines 33-34), but does not teach a specific crosslinking agent. The prior art of McLaughlin also discloses thermally crosslinked acrylic adhesive (column 7 lines 7-9) and further discloses that as a crosslinker one can use aluminum acetylacetonate (column 7 lines 9-10). The Examiner further submits that obviousness only requires a reasonable expectation of success. Given that the Maruoka and McLaughlin both generally disclose acrylic based adhesives and that Maruoka is open to a crosslinking agent, it would have been obvious to one having ordinary skill in the art at the time the invention was made to add aluminum acetylacetonate crosslinker as taught by McLaughlin in the acrylic PSA of Maruoka as modified by Spada, motivated by the desire to provide PSA with suitable cohesiveness, and given that Maruoka desires crosslinkers.

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39. Additionally, the Examiner submits that Applicant argues while McLaughlin do not disclose all the features of the present claimed invention, McLaughlin is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely aluminum (III) acetylacetonate as presently claimed and in combination with the primary reference, discloses the presently claimed invention. Accordingly, applicant's arguments are not found persuasive.

### ***Conclusion***

40. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(A) Chunhua et al. (WO 96/40087) discloses PSA acrylate adhesive crosslinked with aluminum acetylacetonate and contains a drug.

(B) Zbigniew Czech, "Development in the area of UV-crosslinkable solvent-based pressure-sensitive adhesive with excellent shrinkage resistance", *European Polymer Journal*, Vol. 40, pages 2221-2227, 2004.

41. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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42. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANISH DESAI whose telephone number is (571)272-6467. The examiner can normally be reached on Monday-Friday, 9:00AM-5:30PM.

44. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

45. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. D./

Examiner, Art Unit 1794

/Callie E. Shosho/

Supervisory Patent Examiner, Art Unit 1794